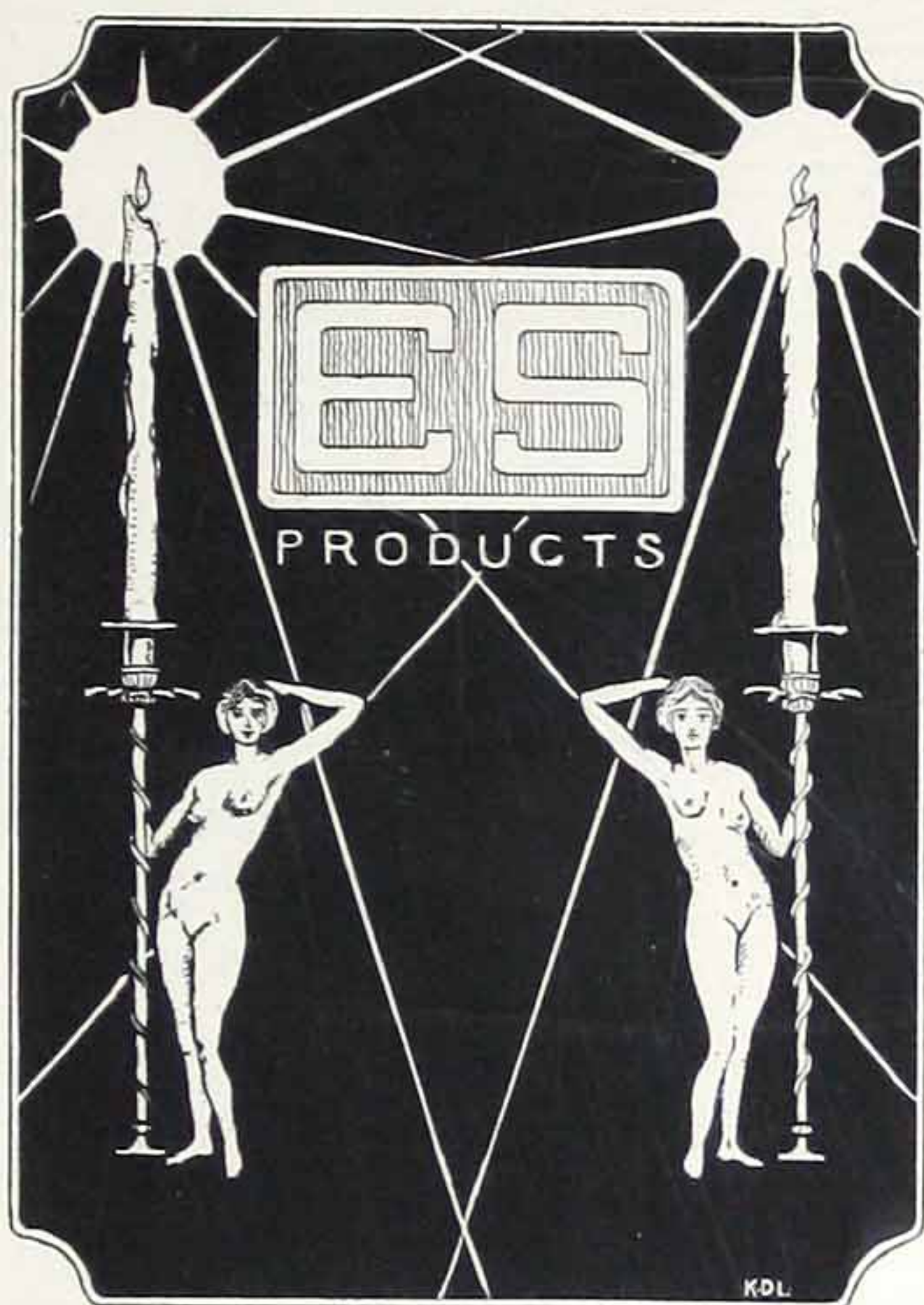


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Elevators

Exhibition Number

EXHIBITION NUMBER

ES BULLETIN

*A Publication Devoted to the Interests of the
Elevator Industry*

PUBLISHED BY

Elevator Supplies Company, Inc.

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CANADIAN ELEVATOR EQUIPMENT CO., LTD.
92 Sherbourne St., Toronto, Ont.

Foreword

IF you are not a regular reader of the **ES** BULLETIN we want you to know that it is published bi-monthly and delivered free of charge to Architects, Engineers, Elevator Manufacturers, Building Owners and Managers or others interested in the elevator industry. It is the only publication devoting its pages exclusively in the interest of this industry. Working as we do with all the elevator companies, we believe there is a need for a medium to disseminate information among those interested in the elevator industry. While we talk a good deal about ourselves we want you to know that the pages of this BULLETIN are open to all those interested—in fact, we earnestly request your help and suggestions as to the subject matter this BULLETIN should contain.

As noted on the front cover, this is a special edition—published to fill a need we believe will be welcome to all those attending the exhibition. If we do not show an inclination toward the artistic in the designs printed within the covers of this book, our designers are capable of creating a fixture suited to any type of

building, and please remember this is only a brief and condensed catalogue of our products. We could hardly begin to give you our ideas of the magnitude or details of our apparatus in this little booklet. We present you this merely to suggest to you some of the devices and systems we have produced to increase the service of elevators—or to safeguard their passengers. If this does not describe our apparatus please note we are the largest manufacturers of signal systems, accessories, elevator door-operating devices and electric dumbwaiters in the world, and our fireproof steel theatre curtains meet the most exacting requirements.

An Invitation

TO visit the **ES** Booth, number 311, will be worth your while. An **ES** Representative will tell you more about **ES** Products and **ES** Service.

To attempt to write a history of the **ES** Company would require more space than is allowed within the pages of this BULLETIN. Let it suffice to remind you that we are the Pioneers in the Elevator Industry. Our company was first founded in 1891, at that time with original and modern Elevator Signal Systems and Electric Dumbwaiters. Today our factory in Hoboken is the largest and most modern of its kind in the world, with branch offices in principal cities of the United States and represented in Canada by the Canadian Elevator Equipment Company of Toronto.

We have men in our employ who have been with us since the Company was first founded, and others have been with us ten, twenty and twenty-five years. As the Pioneer Manufacturers of Elevator Signal Systems, Accessories and Door Devices, you will find many men in other firms in this industry who received their training with the **ES** Company.

We have spent thousands of dollars yearly experimenting to increase the efficiency of vertical traffic. Our engineering and experimental departments are continually working to improve our products. No matter what the product may be, whether a Signal System, Theatre Curtain, Elevator Guide Rail Lubricators or any other of our apparatus, you are protected and assured of securing the very latest and most efficient apparatus that men, money, machinery or brains can produce.

Our Engineers and Organization are available to you in recommending equipment best suited to the problem you have at hand.

ES Elevator Signals

It is a well-known fact that the elevator service has a more important bearing on the good or bad impression which a visitor gets of a building than any other one factor of management. The elevators are the first thing he looks for as he enters the building and they are the last mechanical part of the building to serve him as he leaves.

There are elements which help to give satisfactory elevator service that are not directly a part of the equipment governing the round trip time. Chief of these is the signal system. The full measure of high speed and low round trip time of which the elevator is otherwise capable cannot be obtained unless the proper signal system is used.



ILLUSTRATION No. 1
Push Button Box

It is so simple to press a corridor signal button and have the first available elevator car stop. Few of us have ever stopped to realize just what is behind the push button.

Do you, during the intermission between the pushing of the button and the opening of the elevator doors to admit you, ever wonder what causes the red or white light over the doorway to illuminate? Or do you ever watch the car operator make stop after stop, guided by the red flash of the light near him as he takes you speedily up or down on your short journey? It would be an interesting story to tell you about this. Any of our engineers are available to you in planning your signal systems and will be glad to go into details regarding this subject.

Briefly described, the signal system most commonly used for a group of high-speed elevators in an office building where the cars run continuously, consists of an Up-Down push button box at each floor, a single light operator's signal in the cab, and an Up-Down passenger signal lantern over each corridor door. Pressure of a button by the

waiting passenger causes the operator's signal in the first approaching elevator to become illuminated when the elevator is within a floor and a half of the landing. The same pressure also causes the proper globe ("Up" or "Down") in the waiting passenger signal lantern to become illuminated in front of the first approaching elevator.

The passenger's signal lantern is usually arranged to illuminate two and one-half floors in advance of the car's arrival. It may, however, be arranged to illuminate as many floors in advance as desired, depending upon the speed of the elevator cars. Both signals, the passenger's and the operator's, are extinguished by the automatic action of the overhead controlling mechanism. The operator's signal is extinguished one-half floor in advance of his signal stop. The passenger's signal lantern is extinguished immediately the car travels on its journey after having stopped to take on the waiting passenger.

It is customary to provide at the first floor only, for observation by the starter or hall man, a Mechanical Indicator, either of the illuminated type (*illustrations No. 10 and No. 11*), or of the clock dial type (*illustration No. 8*), or semi-circular type (*illustration No. 7*), the arrows for this type are shown in illustration No. 9. The purpose of this indicator is to keep the starter advised of the position and movement of the various elevators so that he may be in a position to regulate their movement. In some cases these are used at all openings either with or without the waiting passenger signal lanterns.

Usually, where there are more than one bank of elevators, a position indicator is used. This consists of an ornamental fixture containing a panel board with red and white lights for each car that indicate the position of each car as it travels up or down, thereby notifying the starter or hall man the relation of each car to the others at all times.

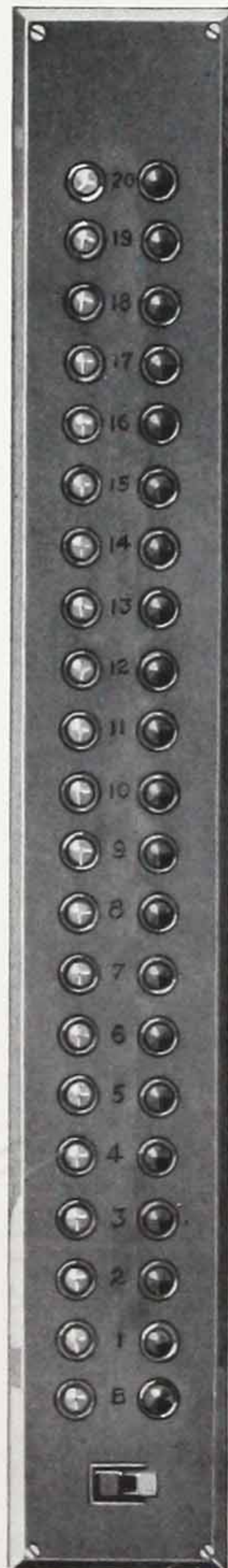


ILLUSTRATION No. 2
Flashlight Annunciator



ILLUSTRATION No. 3
Locdrop Annunciator

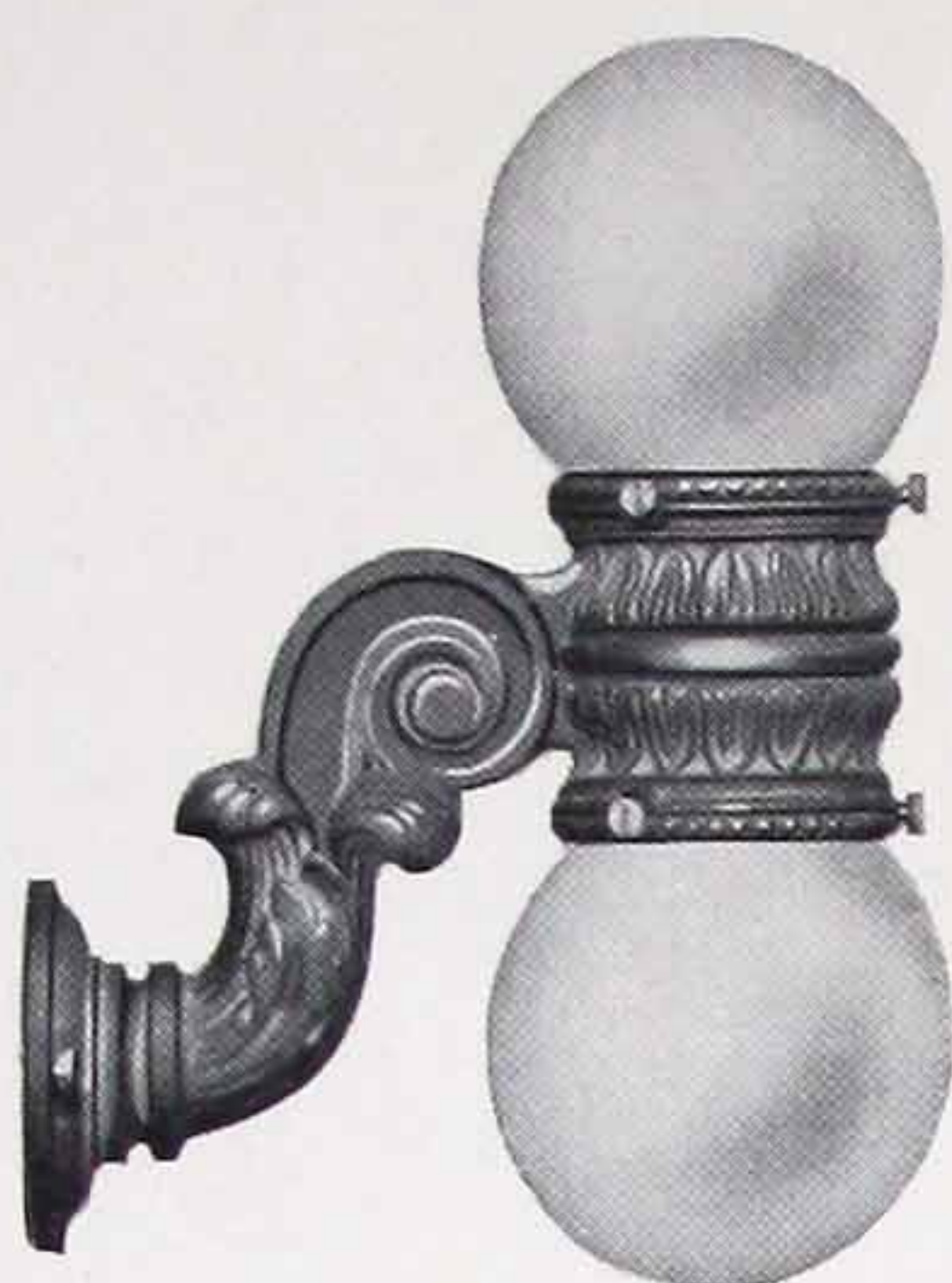


ILLUSTRATION No. 4
Waiting Passenger Signal Lantern

particular type of signal system.

Briefly described, illustration No. 1 shows an "Up" and "Down" push button box. The passenger presses either the "up" or the "down" button and the signal is given in the Flashlight Annunciator (illustration No. 2). After the operator receives the passenger's signal, the next step is to notify the waiting passenger which car will arrive first. This may be handled in different ways. One popular manner of notifying the passenger is the use of "up" and "down" waiting passenger lanterns as shown in illustrations Nos. 4 and 6. Another type of waiting passenger lanterns is shown in illustration No. 5. We manufacture many different designs of lanterns to harmonize with all types of buildings.

To attempt to describe or illustrate the different types of signal systems which we manufacture and install is not the purpose of this brief condensed booklet, but we do wish to mention, in passing, the ES Elevator Dispatching System. This system, as applied to vertical traffic, produces the same results as are required in handling horizontal railway passenger and freight traffic, namely, the moving of the maximum number of passengers within a given time. No system carrying large numbers of passengers can operate efficiently unless

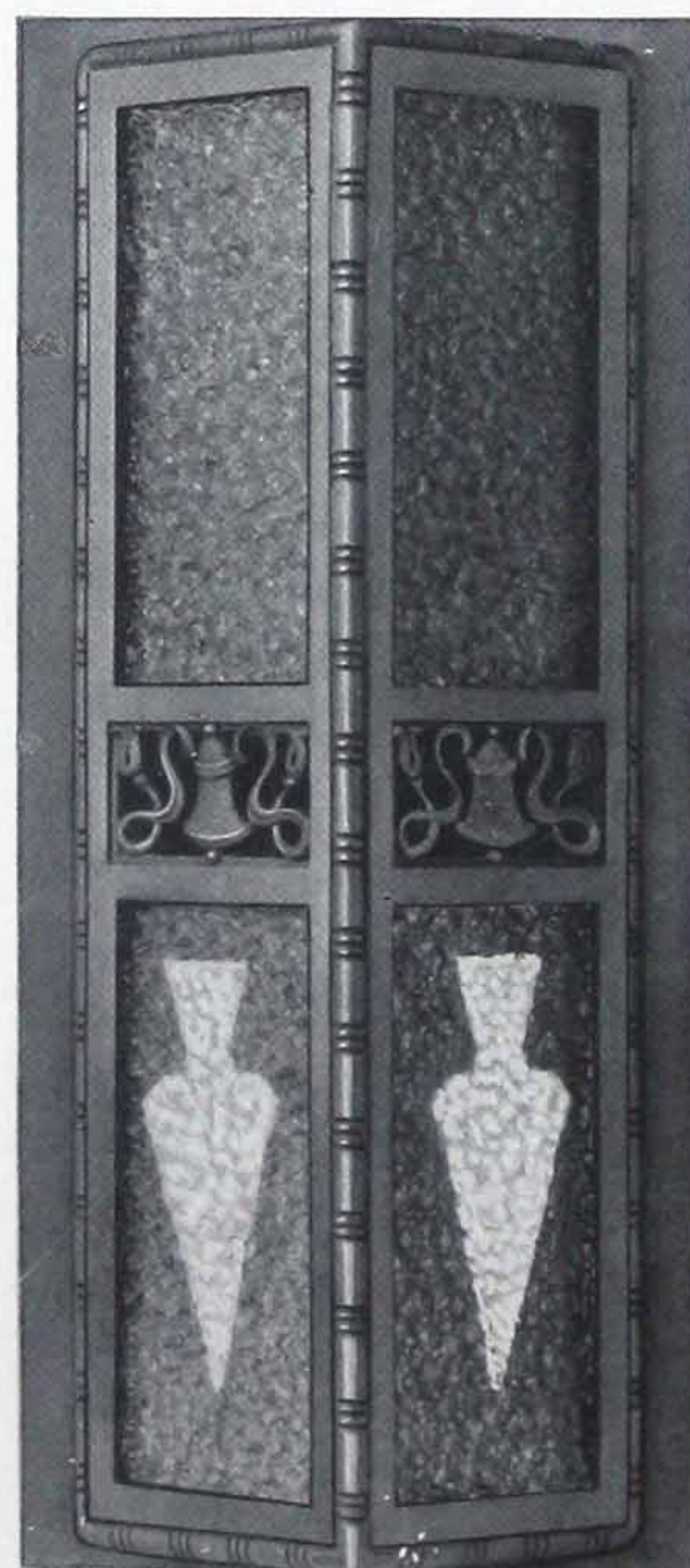


ILLUSTRATION No. 5
Waiting Passenger Signal Lantern

the movement of the transportation units are closely regulated from the time they leave the terminal until they reach the end of their run. It is easy to imagine the confusion that would result were passenger trains started on their runs and then left to complete their schedules without close supervision at all times.

The condition just mentioned is the way in which the average high-speed elevator installation is handled at the present time with elevator dispatching systems that are generally installed, using a bell or signal light to start the elevators at regular intervals.

A new dispatching system has been developed and is now in use in the new Standard Oil Building in New York City. This Elevator Dispatching System is a great improvement over any system now used. It not only dispatches the elevators at regular intervals, but also notifies the operator whether he is traveling

1. On schedule time
2. Ahead of schedule
3. Behind schedule.



ILLUSTRATION No. 6
Waiting Passenger Signal Lantern

It also gives an audible signal to the car operator, notifying him when to start from the terminal landing. These results are accomplished by installing in each car, near to the operator's position, a small signal fixture containing a red and green light. When the car operator maintains his scheduled position in the hatch both lamps in the signal fixture are unlighted. Should he fall behind his scheduled position, a red light flashes momentarily, and should he not regain his proper position, but continue to fall behind, this red light comes on and remains illuminated until the car is able to catch up to the scheduled position. Waiting passenger signals are automatically cancelled as long as the red light is on.

On the other hand, should the operator tend to run ahead of his schedule, the green light flashes momentarily, and then comes on fully should the car get too far ahead. The operator can slow down until the green light disappears, and he then knows he is back on schedule.

Should there be one or more banks of elevators, a central dispatching station is provided, where a Chief Dispatcher is stationed to supervise the movement of the elevators, *regulate the intervals upon which they are*



ILLUSTRATION No. 7
Semi-Circular Mechanical Dial Indicators

dispatched and arrange to cut cars in or out of service as traffic conditions demand. Before the dispatcher is a signal panel in which is located duplicates of the signal lights in each car. When a red or green light shows up the dispatcher knows instantly whether a car is getting behind or ahead of schedule, and should the car fall too far behind the dispatcher can communicate with it and arrange to get it back on schedule as soon as possible.

On the central control panel are also two additional lights for each car. One of these lights is illuminated during the time the car is standing at the main floor loading passengers. The second light is illuminated the instant the individual starting bell for that car begins to ring. The starting bell is arranged so that it is necessary for the operator to start his car up the hatch before the bell stops ringing. Should both these lights remain lighted, the dispatcher knows that a delay has occurred in getting that car started.

It is important that all cars leave the terminal landing the instant the starting signal is given. Waiting for one or two more passengers to enter will simply result in delaying the passengers who are already in the car, and make it difficult to maintain the proper intervals between cars.

If desired, a telltale annunciator may be placed in the control panel, which indicates to the dispatcher



ILLUSTRATION No. 8
Circular Mechanical Dial Indicator

the passenger calls, up or down, existing at each floor. This is of value to the dispatcher in regulating traffic and he can communicate with any car that is making too many stops and have it by-pass several floors with floor signals cut off, and allow the following car to pick up the waiting passengers.

In the absence of some such system of automatic starting, good results have been obtained by making a careful study of the elevator problem and putting the dispatching on a scientific basis. There seems to be no uniform rule for dispatching, nor can there be one very well, because each building has its own peculiar problem, depending on fixed population, number of visitors, hours of arrival and departure, lunch hours, capacity and speed of elevators, etc. But it has been our experience that many buildings can obtain greater efficiency out of their present elevator units by careful attention to this problem, and for that purpose we maintain a corps of skilled signal engineers ready at all times to study the traffic conditions of each building and make their recommendation.

No matter what your problem may be, if it pertains to vertical traffic call upon us and receive the benefit of our knowledge gained in practical every-day experience covering a period of over thirty-five years.



ILLUSTRATION No. 9
Group of Indicators used with Mechanical Indicators

The Horizontal Position Indicator shown in Illustration No. 11 has glass numerals, designating the number of each floor at which the cars stop. These numbers illuminate in proper sequence as a car travels either "up" or "down" the hatchway. The center of this fixture is a lamp or bull's eye, which functions the same as our standard "Up-Down" Passenger Signal Lanterns. It is made up of a special lens with two lights behind, one being red for Down and the other white or green for Up. This bull's eye illuminates two and one-half floors in advance of the floor at which the passenger is waiting, operated by a signal which he gave when he pushed the "Up" or "Down" push button.

Fixtures of this type perform two services, one to the waiting passenger and the other to the starter or hall man. At the same time this fixture takes the place of Mechanical Dial Indicators.

We have other designs than the one shown in the illustration and will be glad to furnish details upon request.

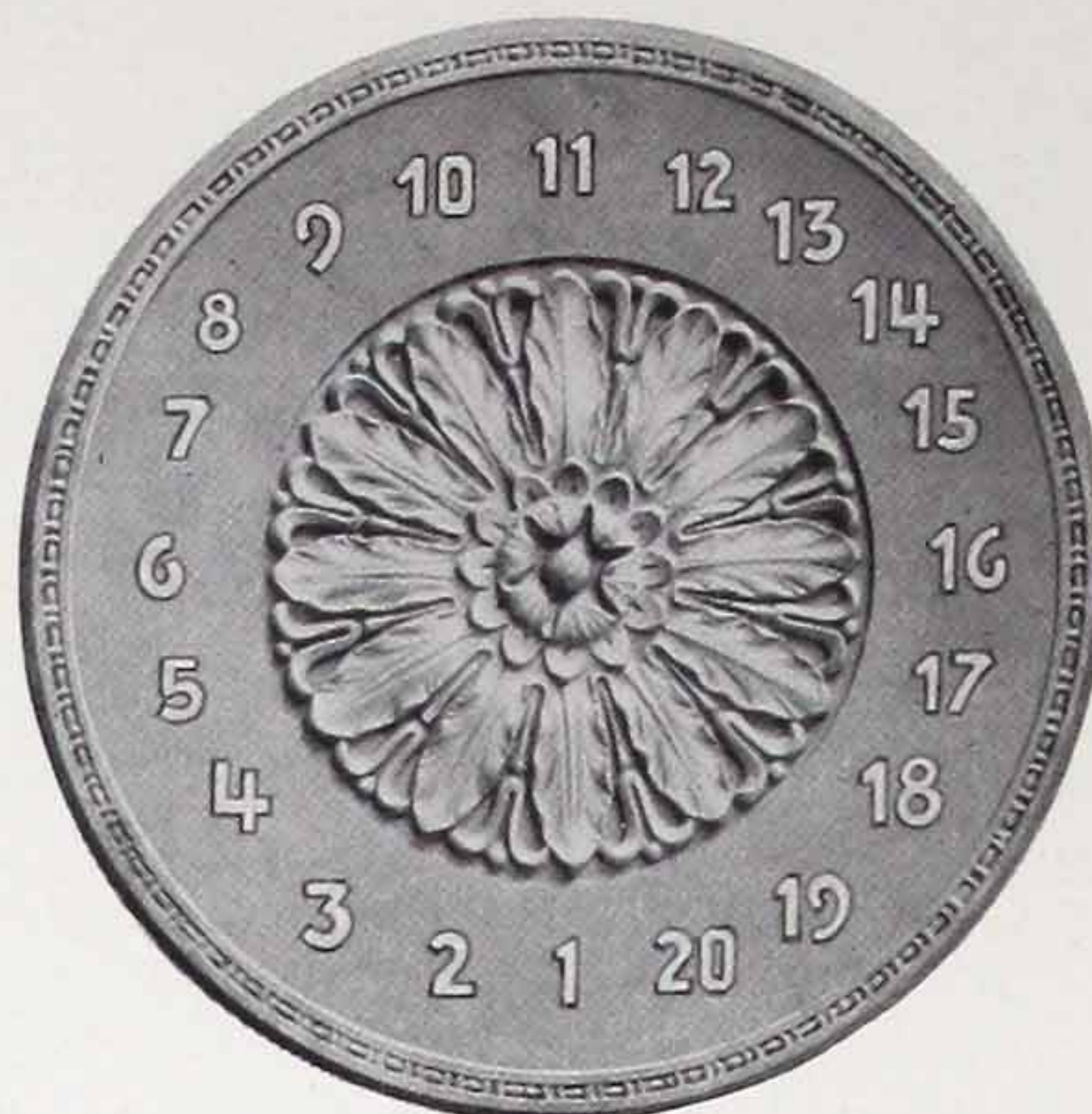


ILLUSTRATION No. 10
Electric Light Indicator

Illustration No. 10 shows another style of indicator. This is known as our circular Electric Light Indicator. It consists of glass numerals set in the metal face. These numerals illuminate in sequence, showing the position of the elevator at all times, either on its "Up" or "Down" travel. With this type of indicator it is possible to evenly space the numerals, which makes a more pleasing appearance than on a mechanically driven indicator, where the numerals have to be spaced corresponding to the various floor heights.

We wish to call to your attention that we have many designs that are not shown on our standard sheets. The question of design depends not only upon the character of the building, but upon the taste of the architects and owners. Covering a period of thirty-five years in this business, we have a tremendous variety of designs which are available for selection. Furthermore, we want you to know we are always willing to co-operate in connection with new designs or alterations to our old ones.



ILLUSTRATION No. 11
Combination Horizontal Electric Light Indicator with Bull's Eye Lantern

ES Positive Electro-Mechanical Interlock

THE ES POSITIVE ELECTRO-MECHANICAL INTERLOCK positively prevents the movement of the elevator until every door is closed and locked. This is very important in the operation of elevators, due to the fact that most accidents occur at the elevator doorway. Before the elevator can be started the doors must not only be fully closed but positively locked mechanically.

Illustration No. 12 shows you what our device looks like when installed on elevator doors. This picture was taken when the door was in the closed position. Illustration No. 13 shows a close-up giving some of the details of the interlock. The door switches of the electric interlock are all in series with the elevator control circuit. The act of opening the door consequently opens the elevator control circuit. This prevents the movement of the elevator, without dependence upon any further operation or apparatus. When the door is closed all control circuits are closed, thereby allowing movement of the elevator. You will note that it has only one movable part and that is actuated solely by gravity. It is important to know that there are no springs required to hold the latch in its locked position and if, through damage or deliberate intent, the interlock is prevented from functioning, the safe conditions still exist as the elevator can not be moved.

Sometimes it is found necessary to run the elevator with the doors open. This necessity may arise in case of fire or repairs to the elevator. Provisions are made for just such cases as these, and on every installation we provide an ES EMERGENCY RELEASE SWITCH, mounted in the car.

We have thousands of these interlocks in service. They require practically no care, for the interlock has no springs and requires neither lubrication, cleaning, nor any other attention, for it is an exceptionally sturdy product, built for long life.

Approved for use in the City of Baltimore after successfully passing tests which are recognized as the most exacting of any city in the world.

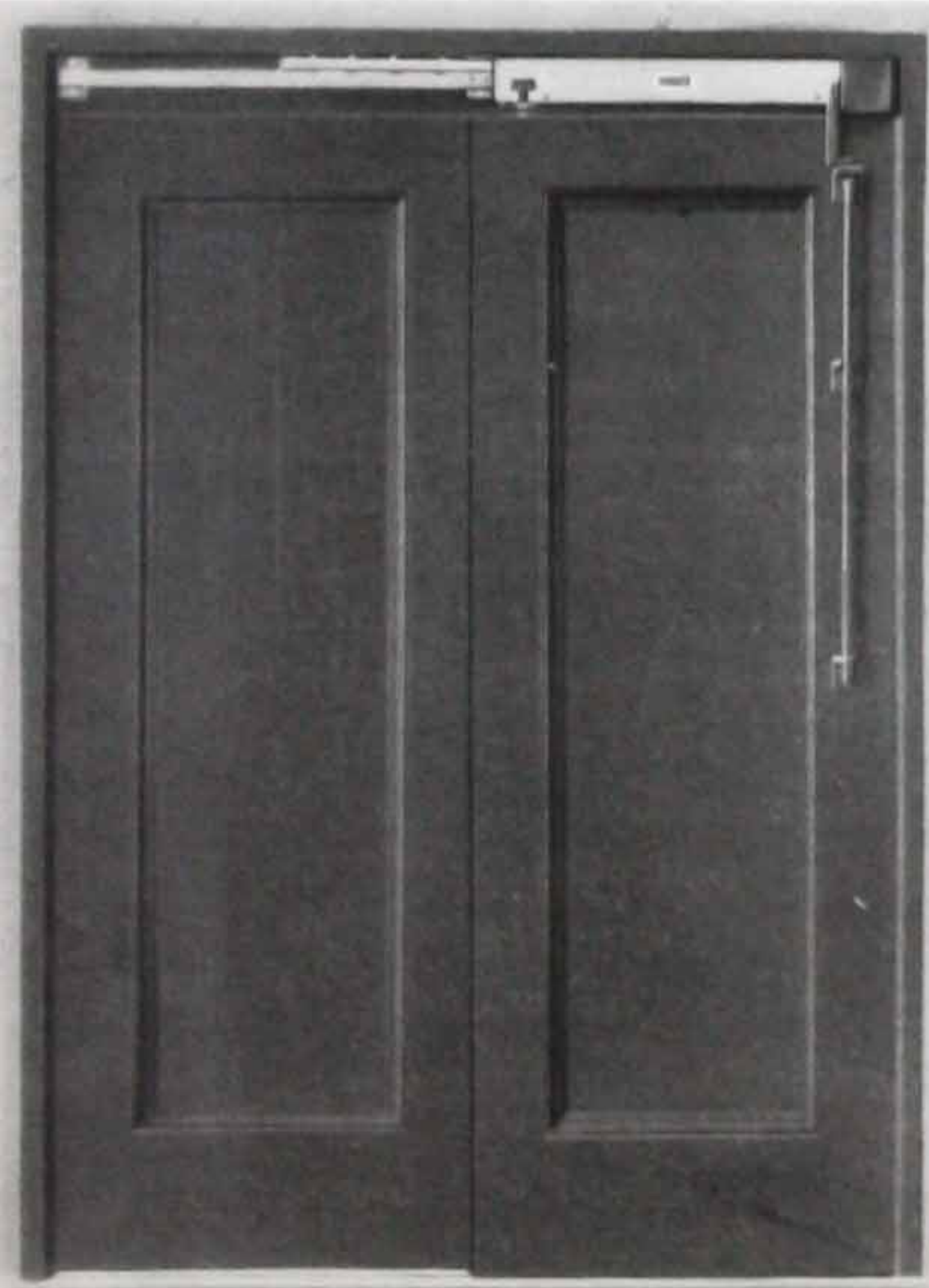


ILLUSTRATION NO. 12
Typical Elevator Door equipped with
ES Positive Electro-Mechanical Interlock

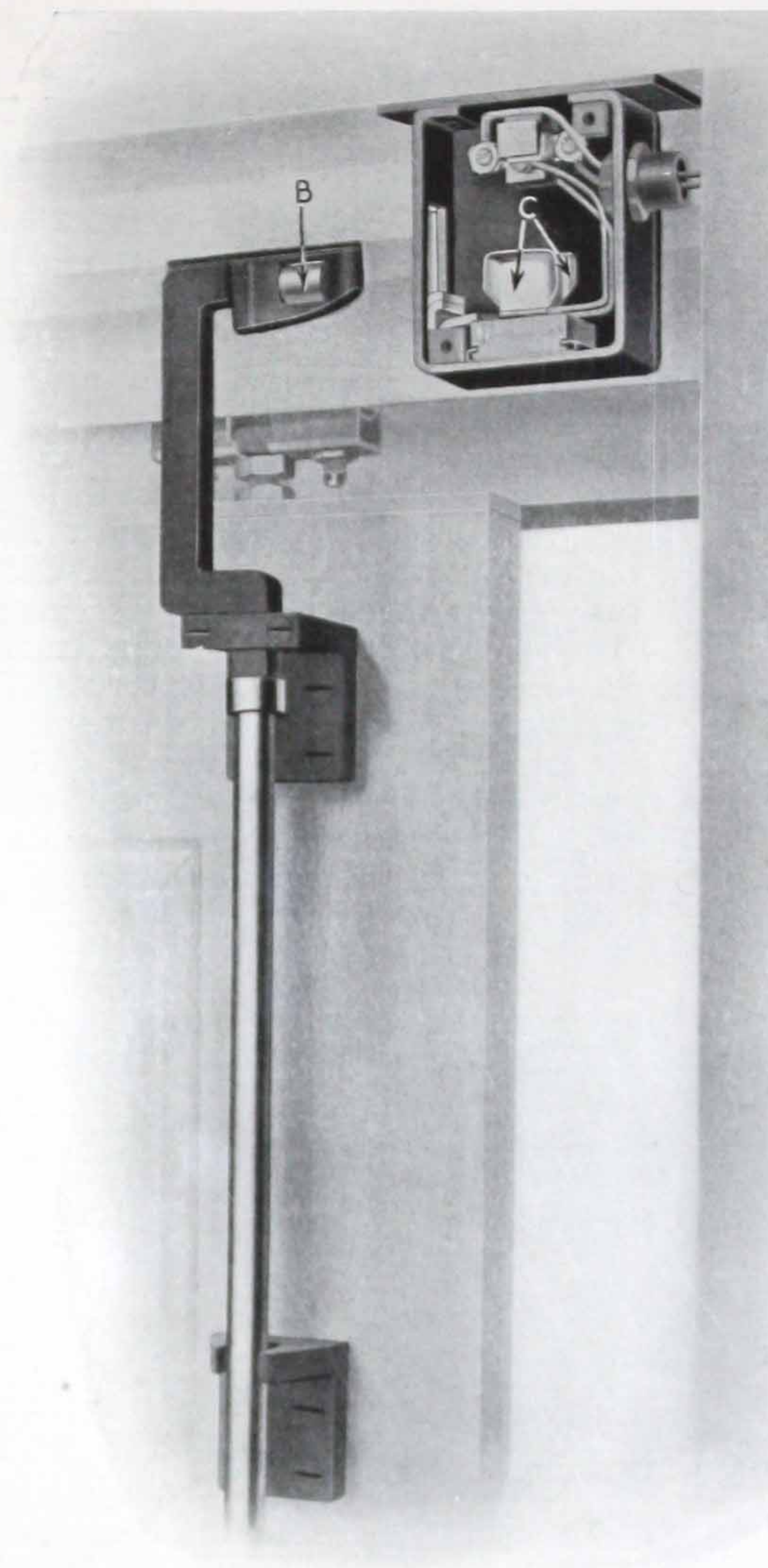


ILLUSTRATION NO. 13
ES Positive Electro-Mechanical Interlock, door open. Elevator control circuit also opened by removal of contactor B from contacts C. Elevator cannot be started.

Your inquiries will receive careful attention if addressed to either our home office or branch offices, estimates for furnishing and installing will be gladly furnished and assistance in preparing layouts and specifications without any obligation on your part. If you prefer to make your own installations we will gladly furnish you with our Form No. 121A, showing just how to make a proper installation. You will find it a simple problem to install and if interested we will gladly send you prices F.O.B. our factory.

ES Elevator Door Closer

ILLUSTRATIONS Nos. 14 and 15 on this page illustrate the **ES** ELEVATOR DOOR CLOSER. It consists essentially of an operating cylinder containing a piston which is connected to the lever arms. The lower portion of the cylinder is the dash pot, in which checking action takes place, and the upper, enlarged portion, the spring chamber (see illustration No. 16).

The elevator operator opens the door manually. As the door opens, the piston is drawn up, compressing the spring in the operating cylinder. When the door is released the stored energy in the springs closes it. As the door closes, the piston, descending through the liquid in the dash pot, checks the door during the last few inches of travel and prevents it from slamming. It will be noticed that when the door is closed the lever arms have fallen into a straight line and form a positive toggle lock. It is customary to provide a Trip on the car, which engages with a Striker Plate on the ground floor door when the door is open, making it unnecessary for the operator to retain hold of the door while waiting for passengers. To release the door at this floor the operator steps on a button.

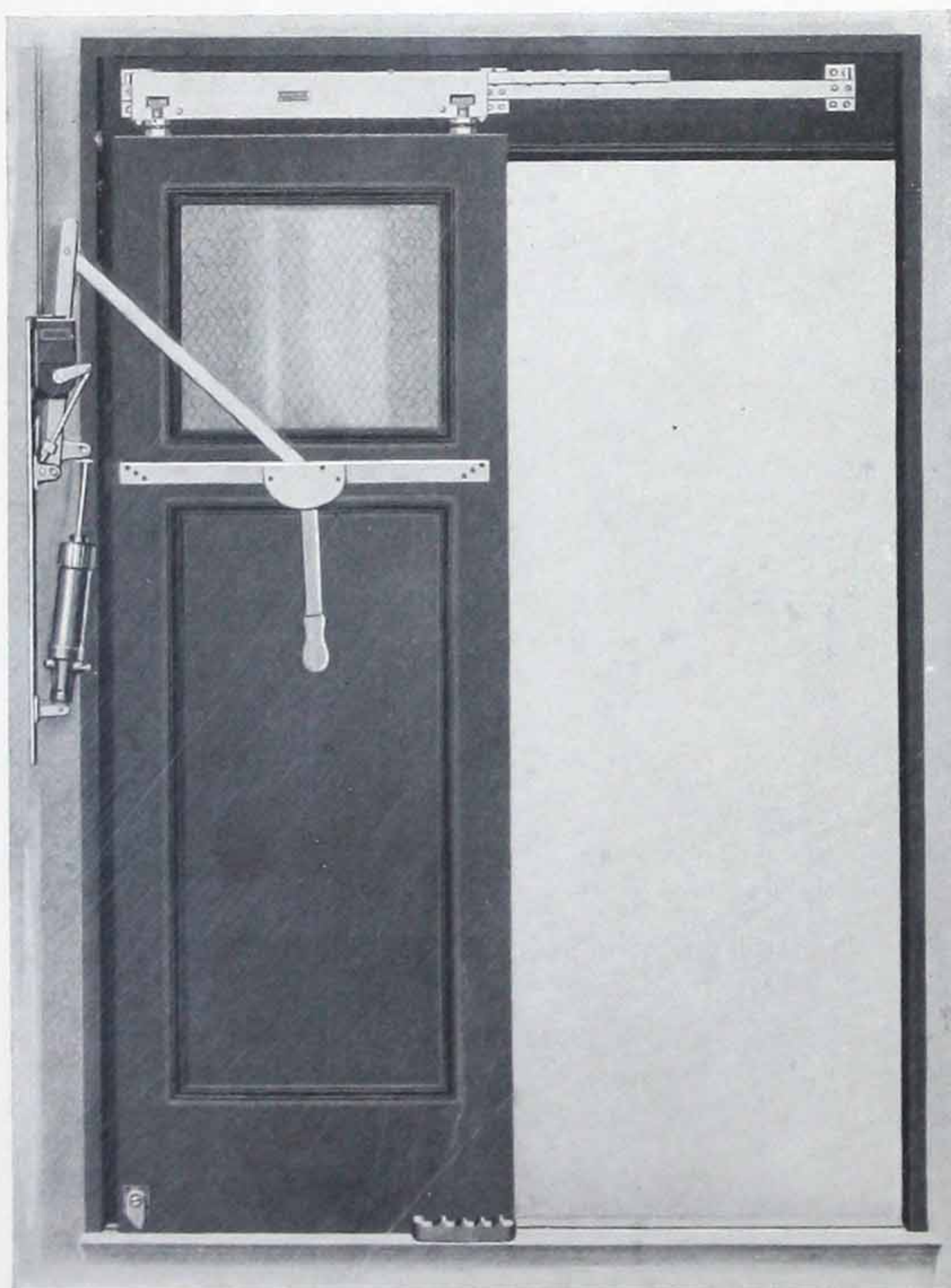


ILLUSTRATION No. 14
Typical elevator door equipped with **ES** Door Closers and Positive Electric Interlock, door in open position

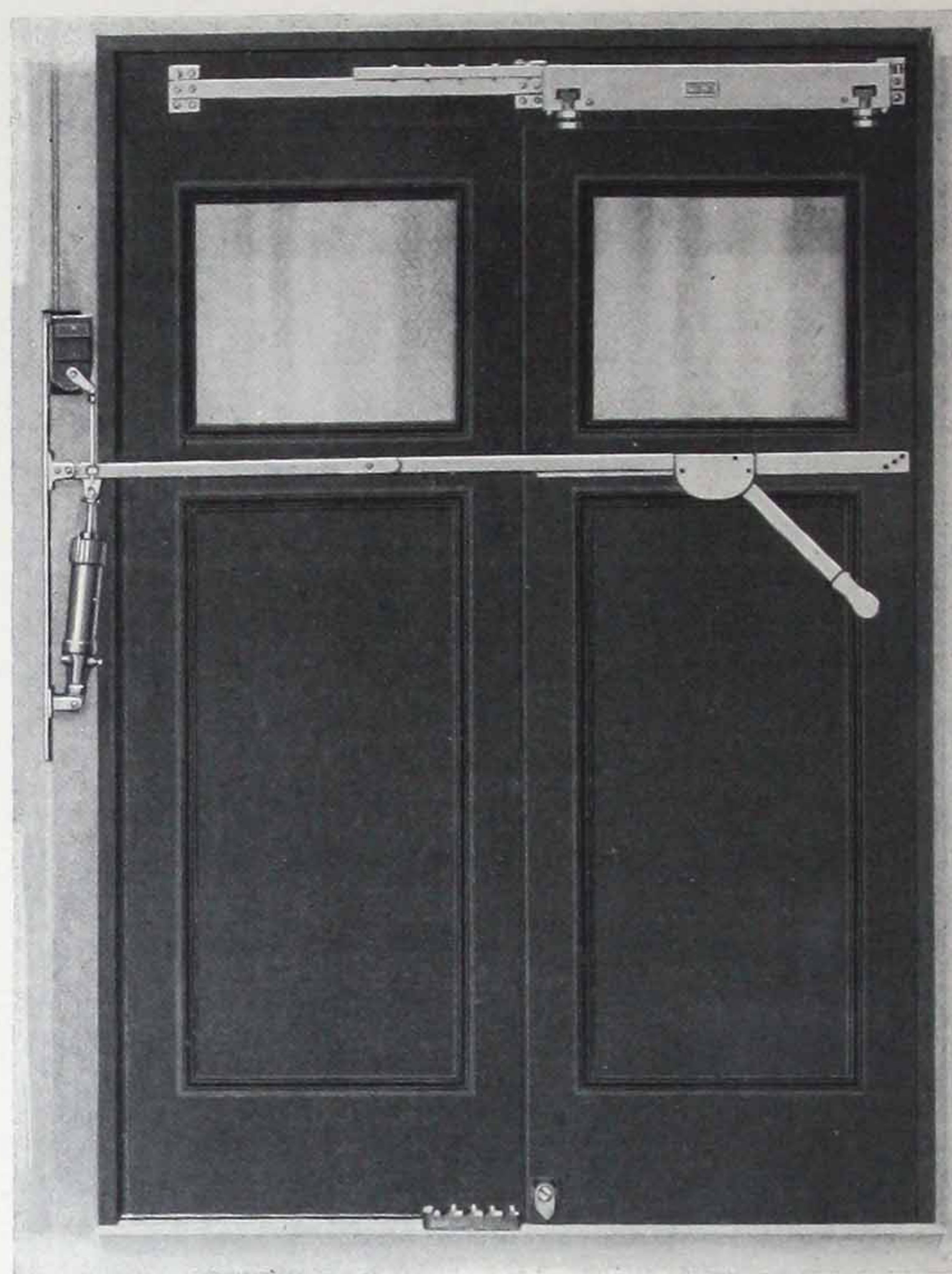


ILLUSTRATION No. 15
Same as Illustration 14. Door in closed position

When two-speed doors are used the **ES** ELEVATOR DOOR CLOSER is attached to both leaves, operating them simultaneously. This eliminates the usual racks and pinion in the hanger, thereby reducing to a minimum friction and noise, and effecting a considerable saving in the cost of the hanger.

We have been manufacturing this type of elevator door-closing equipment for many years, and through actual experience we have recent improvements in spring and cylinder design that have materially reduced the effort required to open a door, and so perfected our product, that in closing the door all noise of slamming is eliminated and at the same time the door is tightly closed. This feature alone is an important one, for it is a well-known fact that hotel rooms, apartments or offices near the elevators are not desirable from a tenant's standpoint where the elevator doors are slamming shut every few minutes. No such objections will be made by tenants near elevators equipped with **ES** ELEVATOR DOOR CLOSERS.

Our experience in vertical traffic covers a period of over thirty-five years, valuable information has been obtained over these years and our products have been refined to the highest type of up-to-the-minute improvements found only in products made by firms of modern character. The material and workmanship of our products are of the very highest type—our engineers are trained and experienced in this particular phase of vertical traffic.

The **ES** Check

AS described on the preceding page, the **ES** ELEVATOR DOOR CLOSER eliminates the possibility of noise in slamming the elevator door and at the same time the door is tightly closed. This is accomplished by the **ES** CHECK, as shown in illustration No. 16. This check makes the door open easier and close quicker than any other similar device known. Material and workmanship employed in the construction of this check are of the highest quality. A brief description of the finished check as shown in the illustration is as follows:

BEARINGS: Two bearings. One at top in cap; one at piston. Self-aligning and simple to assemble.

SPRINGS: One main spring per check and only five sizes required to handle all types and weights of doors. The main spring is of the conical type. A small kick-off spring set inside the larger one starts the door off rapidly when closing.

REFILLING: Refilling is a simple matter for the maintenance man. Slide the cover off the hole in the top cap and pour in a small quantity of **ES** DOOR CHECK LIQUID. Check is not removed for refilling.

OPERATION: Minimum effort is required to open the door due to the use of **ES** DOOR CHECK LIQUID. This liquid is made from a special formula allowing uniform operation at all times and its evaporation elements are reduced to a minimum.

INSPECTION: Disconnect upper end of piston and take off drop-forged connector, remove cap; then all operating parts may be readily pulled out for inspection, which can be done without removing check from door. It is unnecessary to remove bottom cap at any time.

WEAR: The check is designed to give years of service with little or no attention. All wearing parts are of ample size; for instance, the pivot pins are $\frac{1}{2}$ -in. diameter and case-hardened.

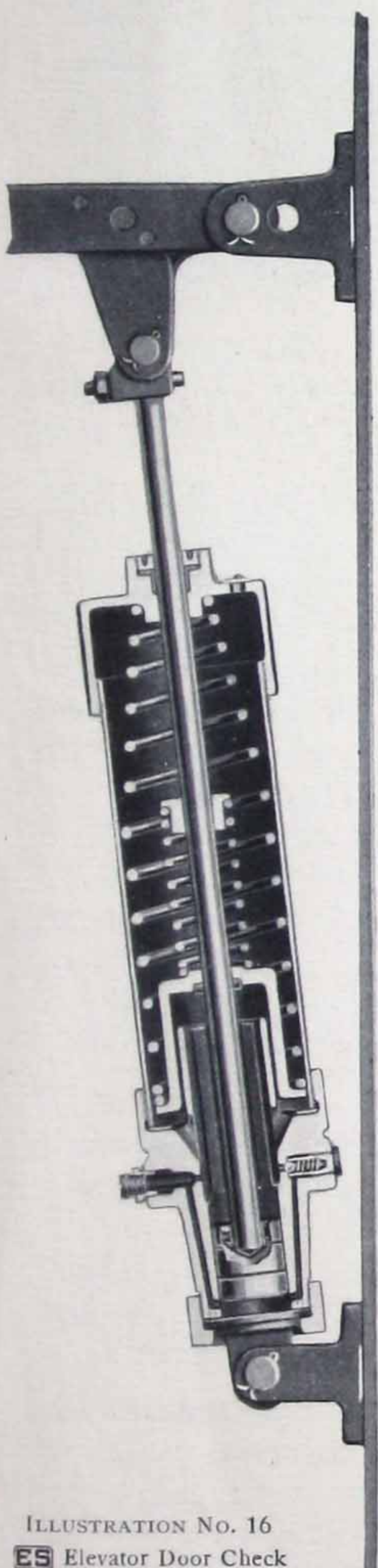


ILLUSTRATION No. 16
ES Elevator Door Check

There are less moving parts in E-S Closers than any other type. They can also be refilled without removing.

The **ES** Positive Electric Interlock

IF, in addition to quietness and ease of operating your elevator doors, you desire a third guaranty—safety—we recommend the use of our **ES** POSITIVE ELECTRIC INTERLOCK in conjunction with the **ES** ELEVATOR DOOR CLOSER. In some cities these safety devices are required.

It is a well-known fact that practically all elevator accidents occur as the passenger enters or leaves the elevator. By the use of the **ES** POSITIVE ELECTRIC INTERLOCK all such accidents may be eliminated, for this device absolutely prevents the movement of the elevator until all door openings are positively locked. Illustrations No. 17 and No. 18 show in detail its construction and relation to the **ES** ELEVATOR DOOR CLOSER. A brief description of how this device functions is as follows:

The two contact arms "A" are in series with the elevator control circuit. When the door is in the closed position this circuit is also closed through the segments "B," which are mounted on a rotating

shaft (see illustration No. 17), and the elevator may be operated. When the door is opened, the segments "B" being positively connected to the arm of the **ES** ELEVATOR DOOR CLOSER, are rotated and the elevator control circuit is opened (see illustration No. 18), thus absolutely preventing any movement of the elevator as long as the door is in the open position.

An **ES** EMERGENCY RELEASE SWITCH is installed in conjunction with all installations of **ES** POSITIVE ELECTRIC INTERLOCKS.

We offer the assistance of our engineers and organization in planning the proper equipment for your elevator door.

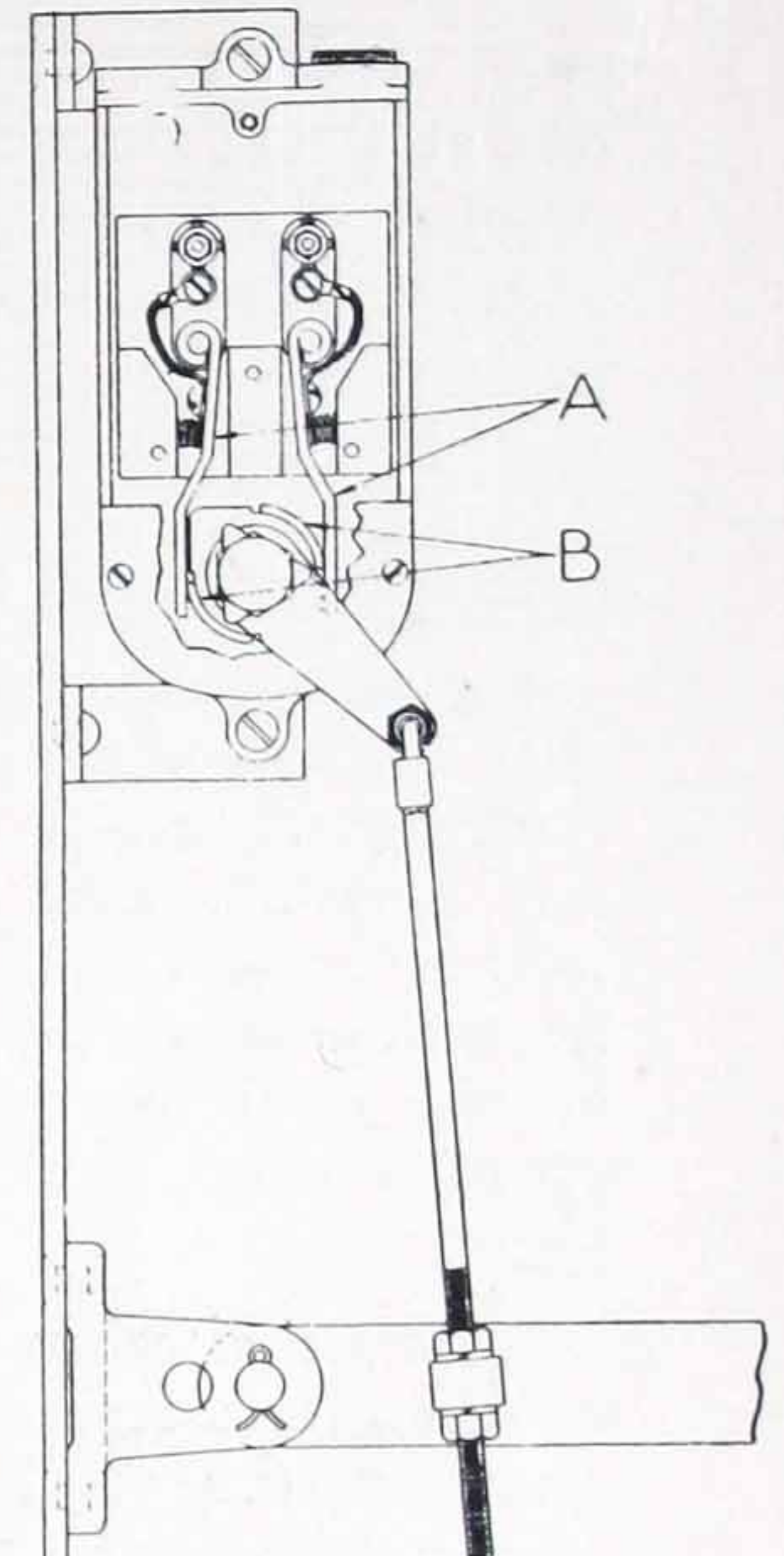


ILLUSTRATION No. 17
Positive Electric Interlock in closed position.

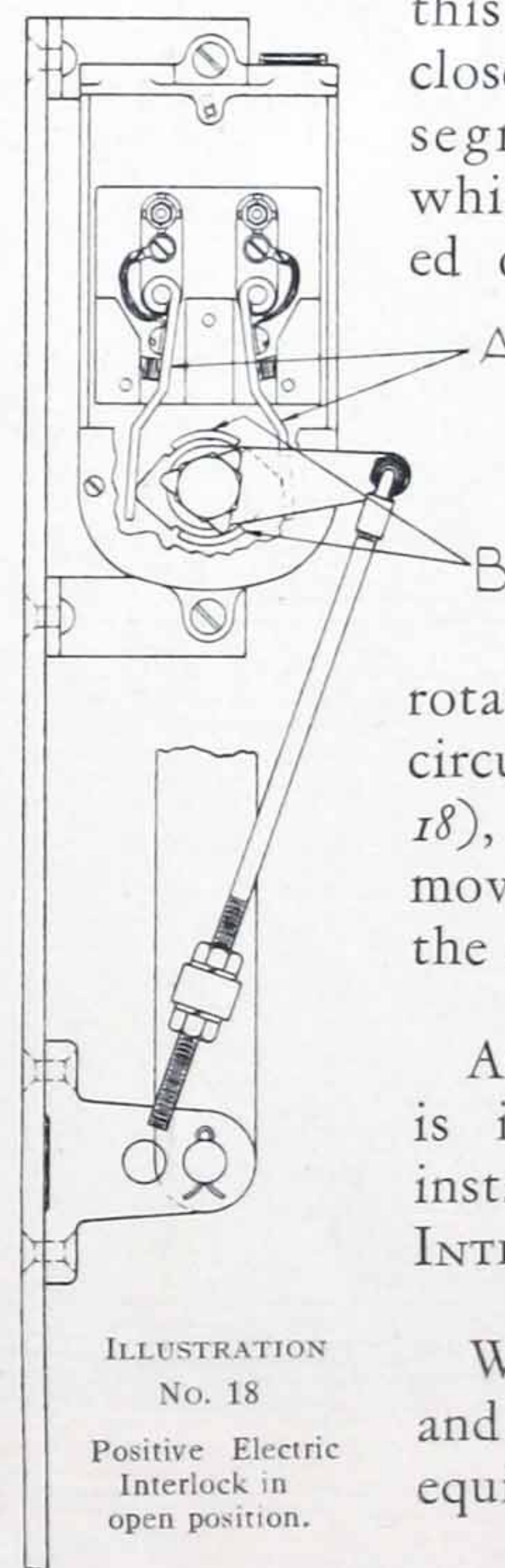


ILLUSTRATION No. 18
Positive Electric Interlock in open position.

ES Crowell Pneumatic Door Operator

INCREASING land values have tended to increase the heights of buildings. By increasing the height of buildings it becomes necessary to speed up the elevator service for obvious reasons, such as the necessity of conveying passengers quickly to their destinations and particularly to obtain maximum service out of the minimum number of elevators, thus allowing a more profitable use of valuable floor space.

With this end in view the speed of elevators has been greatly increased, not only by the actual speeding up of the cars but by rapid and efficient methods of opening and closing of elevator enclosure doors and car gates. Where formerly doors were opened by hand they are now opened rapidly by the use of compressed air.

For many years our **ES** DOOR CLOSER has served to close the doors. This is particularly valuable as a safety feature as it insured the doors being closed and locked, but with the **ES** CLOSER it is still necessary to open the doors by hand, the speed of the elevator depending upon the effort of the elevator operator.

Without altering or eliminating the desirable features of the **ES** DOOR CLOSER, the **ES** CROWELL PNEUMATIC DOOR OPERATOR has been devised to occupy the same space as the door closer, but has the added advantage of opening the doors by compressed air at

a much greater speed than they could possibly be opened by hand. The slight movement of a small hand lever, foot button, or electric push button attached to a valve permits air to enter the cylinder of the **ES** CROWELL CHECK causing certain types of doors to open at a speed of as little as three-fifths of one second.

A similar device can be attached to the car gates so that the movement of buttons or lever above mentioned open both car gates and enclosure doors simultaneously.

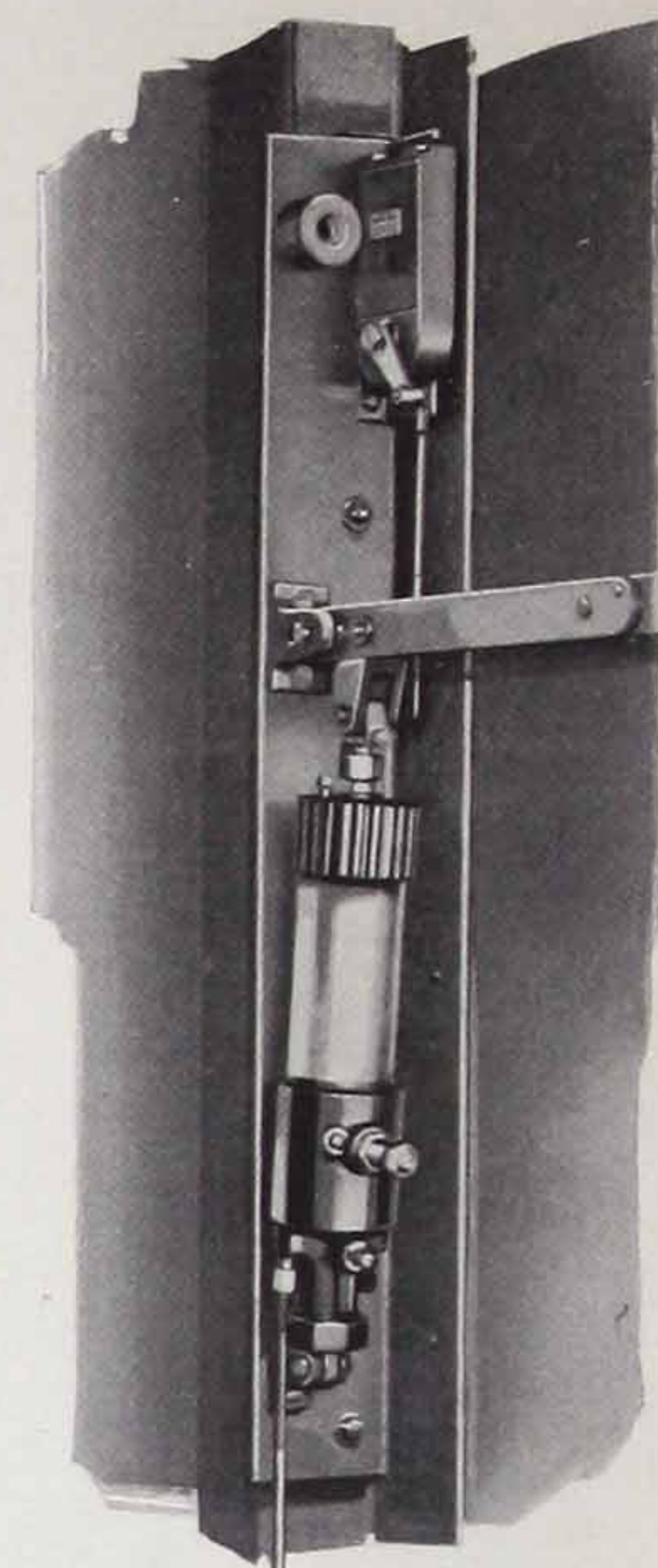


ILLUSTRATION No. 20
Crowell Pneumatic Check and Positive
Electric Interlock — door closed position

If desired, the doors can be so connected with the elevator mechanism that when an elevator car stops opposite to the landing doors the doors will open automatically without the assistance of the elevator operator and the movement of the elevator controller to start the car will also close the doors.

Spring pressure closes the doors in the same manner as in the **ES** DOOR CLOSER. At night or on holidays, when it may not be desirable to operate the compressor plant, the doors can be opened manually and they will automatically close and lock without slamming.

We invite inspection of this device and will be pleased to have our engineers consult with architects and engineers who have any particular problems to solve in connection with the operation of elevator doors.



ILLUSTRATION No. 19
393 Seventh Avenue Building

393 SEVENTH AVENUE
BUILDING
NEW YORK CITY, N. Y.

Architect:
Starrett & Van Vleck
General Contractor:
Thompson-Starrett Co.
Consulting Engineer:
E. E. Ashley

ES Overhead Type Pneumatic Door Operator

THE overhead type of PNEUMATIC DOOR OPERATOR differs from the CROWELL PNEUMATIC DOOR OPERATOR in that it both opens and closes the elevator enclosure doors and car gates by compressed air and is particularly suitable for the operation of heavy doors and for large openings, such as two-thirds center opening doors, butterfly or folding doors and three speed door units.

The engine is placed directly above the door hangers and suitable space must be provided for the engine and operating arms which connect to the doors. A similar engine is used for opening and closing the car gates.

The methods of control can be either by hand lever, foot lever or electric push button, as may be most desirable in either case. No effort is required on the part of the operator, and the doors are constantly under his control.

The hand control type consists of a lever placed within easy reach of the operator. The foot lever or push button type consists of a push button box, mounted convenient to the operator, with two buttons, one marked "open" and one marked

"closed." To open, the operator pushes the button marked "open" and the door stands open until the "closed" button is pushed. On this type of installation an emergency foot or hand control is provided. In case of failure to the current, the door may be operated from this control. Another type of control is automatic, used with self-leveling type of elevator machines. This device is so connected that the doors automatically open when the elevator reaches the floor level. To close the door a push button is provided. By simply pressing this button the door closes quickly and easily.

On all types of operation the doors open and close rapidly without slamming, the cushioning of the doors being governed by the use of restricted air chambers and pop valves.

The illustration shown on this page is a view taken from the inside of an elevator hatch. It gives you a rough idea of the appearance of the overhead type of Pneumatic Engines for opening and closing outer opening doors.

We have thirty-five years' experience in manufacturing and installing this type of Pneumatic Engine. Our organization and engineers are available to you in helping to solve your vertical traffic problems.

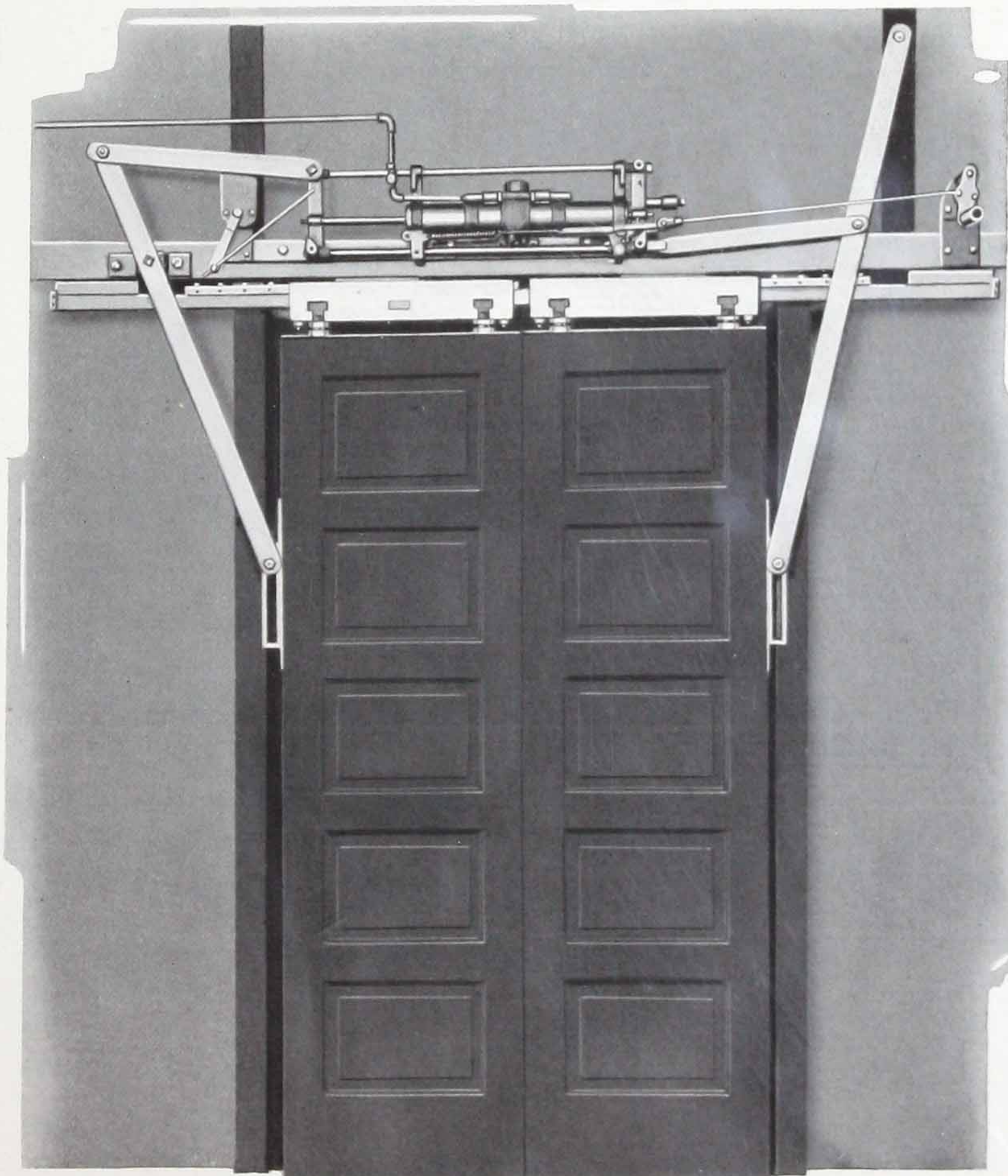


ILLUSTRATION No. 21
Overhead type Pneumatic Engine, door closed

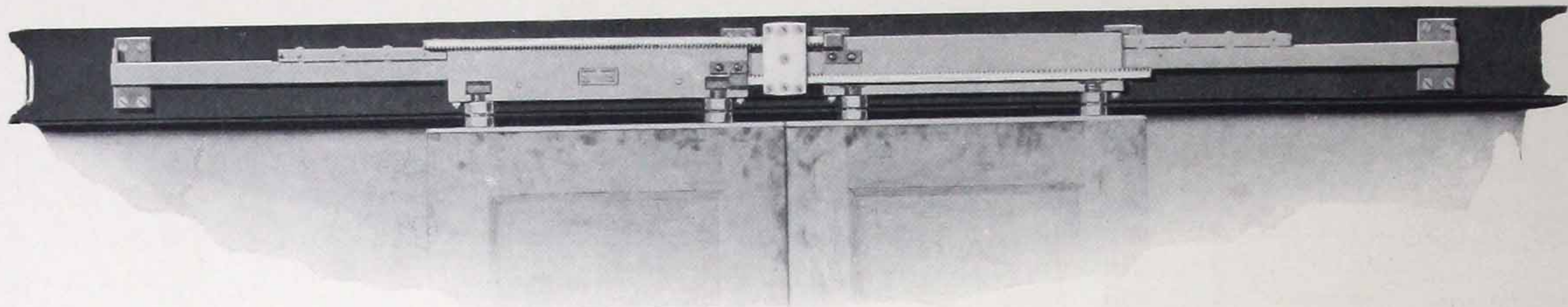


ILLUSTRATION No. 22

Roller bearing hanger shown on center opening doors, doors closed

ES Roller Bearing Hangers

THE illustrations on this page show typical installations of **ES** ROLLER BEARING HANGERS. The illustration at the top shows the doors in the closed position. The lower picture shows the doors opened. The **ES** HANGERS are compact in arrangement, substantial in design, and of sturdy construction. Its exclusive feature, to which is largely due its superiority over other hangers, is the use of rollers instead of balls as a bearing medium.

It is a well-known fact that roller bearings are more durable, silent, and more nearly frictionless than ball bearings. We quote from a well-known authority, who states:

"Given a ball of certain diameter and a roll of the same diameter and equal length, the roll will have a greater surface contact with its raceways than the ball under equal loads. The direct compressive stress over this area of

contact will therefore be smaller for the roll than the ball. Assuming a maximum safe working stress, the roll will safely carry a greater load than the ball at all speeds of rotation, since the drop in capacity at different speeds, due to fatigue stresses, is approximately the same for each. Size for size, made of the same material, and operating at the same speed, the roller bearing will, for a stated safe working fibre stress, generally carry approximately 50 per cent. greater load than the ball bearing."

ES ROLLER BEARING HANGERS, when included in your specifications with **ES** DOOR-OPERATING DEVICES, insure you maximum door efficiency; it further places the responsibility for the operation of the elevator doors with one concern. This item alone is well worth your consideration.

If your problem pertains to vertical traffic our engineers are available in helping to plan for maximum service from your elevator equipment.

Write for our Hanger Catalogue.

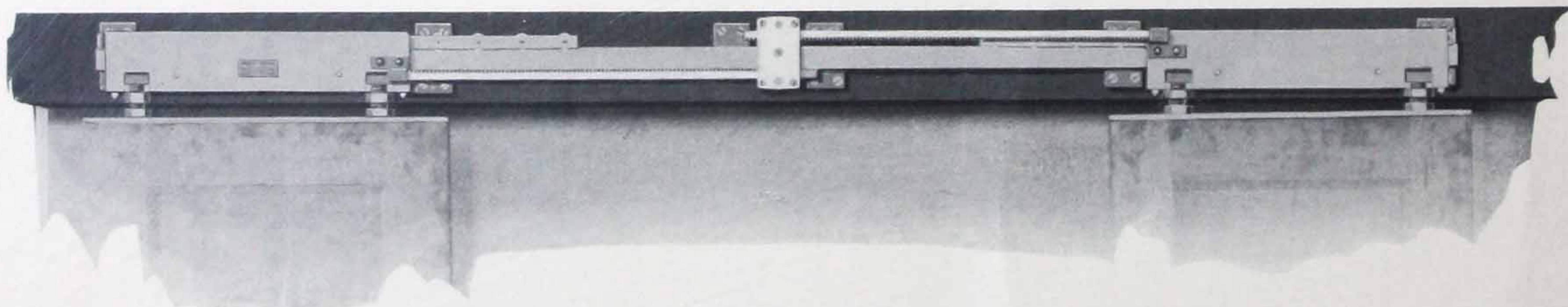


ILLUSTRATION No. 23

Roller bearing hanger shown on center opening doors, doors open

ES *Fireproof Steel Theatre Curtains*

WE have been manufacturing FIREPROOF STEEL THEATRE CURTAINS for the past twenty years. **ES** CURTAINS absolutely prevent the spreading of fires from the stage to the auditorium, and secures the audience from fire hazards. They may also be used as soundproof partitions in high schools. **ES** curtains are installed on the stage side of the proscenium opening and seals the entire opening when in the closed position. The curtain is of the rigid type, built with patent leveled steel sheets on the auditorium side, with vitrified asbestos panels on the stage side and separated by air pockets. It is operated by a hydraulic machine located below the stage, the control of which is accessible from several stations.

Our curtains meet the rigid requirements of the City of Chicago and are approved for use in Washington, D. C., following a test by the Bureau of Standards in which they found our curtain to give protection from six to ten times the time required for orderly exit of the audience from a filled auditorium. Our curtains are also approved by the National Board of Fire Underwriters, and buildings equipped with our curtains usually benefit by a lower insurance rate.

Stage Lifts

WE also manufacture stage lifts to meet your particular requirements.

Stop Recorders for Elevators

THE **ES** ELEVATOR STOP RECORDER can be placed wherever convenient and is ordinarily connected to the elevator control circuit on the control panel. This recorder makes accurate count of all stops made, false stops as well as true landings. It is simple, therefore, to determine what cars are making an excessive number of (false) stops.

Elevator Travel Recorders

THE cost of elevator service is a large item in the operating expense of a building, and an accurate record of it is therefore important. To be of value the cost must be reduced to a unit basis of "per mile" of travel. The **ES** TRAVEL RECORDER registers the actual travel of the elevators in miles and hundredths thereof. It has the accuracy of a watch.

ES *Positive Guide Lubricators*

THE **ES** POSITIVE GUIDE LUBRICATOR requires no attention whatever beyond filling it with oil. Keeping the elevator guide rails properly oiled is an important part of efficient elevator service. **ES** LUBRICATORS take proper care of this detail for you.

ES *Threshold Illuminator*

A GREAT many elevator accidents are due to the passenger stumbling on a threshold when entering or leaving the car. It is not always possible to bring the car exactly flush with the floor landings, but accidents of this sort will seldom occur if the passenger can see the threshold plainly. The **ES** THRESHOLD ILLUMINATOR illuminates the entrance so that the passenger plainly sees whether the car is flush or not.

ES *Illuminated Threshold*

TTHIS fixture works on the same principle as the THRESHOLD ILLUMINATOR. In place of a light thrown on the threshold, this device is an arrangement of small lights embodied in the floor of the elevator car, plainly showing the passenger the position of the car floor compared with the floor level.

ES *Electric Door Operating Mechanism*

THE use of larger freight elevators and the demand for greater speed of freight service is rapidly making obsolete manually operated freight elevator doors. A door ten or fifteen feet wide by eight or ten feet high is under any condition difficult to open or close by hand.

Doors equipped with **ES** ELECTRIC DOOR-OPERATING MECHANISM are opened and closed by the simple pressure of a push button mounted in the car within convenient reach of the operator.



Call on the **ES** Company and get the results of thirty-five years' experience backed by experts and the largest organization devoted to elevator traffic and safety.

ES Electric Dumbwaiters

OUR experience in building electric dumbwaiters covers a period of thirty-five years, and during all this time we have been ever on the alert in perfecting our apparatus to meet the most exacting requirements. The material used in manufacturing ES ELECTRIC DUMBWAITERS is the best that can be had. The workmanship could not be duplicated, for, as stated, we have thirty-five years' experience. Some of our men have been with us practically since we first started manufacturing dumbwaiters, and the new men in our organization have been carefully selected and taught by men who know.

The illustrations shown on this page are typical views of a hoisting machine and control panel. This machine is of the direct connected single worm and gear winding drum type, mounted on a common rigid iron base. It is designed to use current only when the car is in motion. All shafts are of steel, and all bearings are arranged for ample lubrication. A safety brake is provided which is automatically applied whenever the electric circuit is broken, thus holding the car securely at that point of

its travel, and limit switches are also provided which open the control circuit in case the car should travel beyond its terminal landings.

The direction (*reversing*) switches are mounted on the vertical control panel operated by solenoids (see illustration) and are mechanically interlocked to prevent both switches being closed at the same time. The floor selector, as shown mounted over the hoisting machine, consists of a circular slate or turntable fitted with brass contact strips and is driven by a sprocket chain from the drum shaft. One floor selector magnet is provided for each floor served by the car.

The principle of each of our machines is practically the same, varying according to the duty it is to perform. For instance, the load it is to carry may be 100 pounds and the speed 500 feet per minute, or again the load may be 500 pounds and the speed 100 feet per minute. The same would apply to the control panel; it may be required for a two-story building or again it may be a twenty-five story building.

The type of control is governed by the kind of duty the dumbwaiter is to perform. If only a two-stop machine, two control buttons would be provided at each terminal, one Call and one Send. But supposing a number of floors are served, an efficient control such as our "One Point with Signals" would practically make the dumbwaiter a human messenger. This control is from one Central Station from which it can be sent from any floor to any other floor. Provisions are made in this control so that the operator can always tell which floor

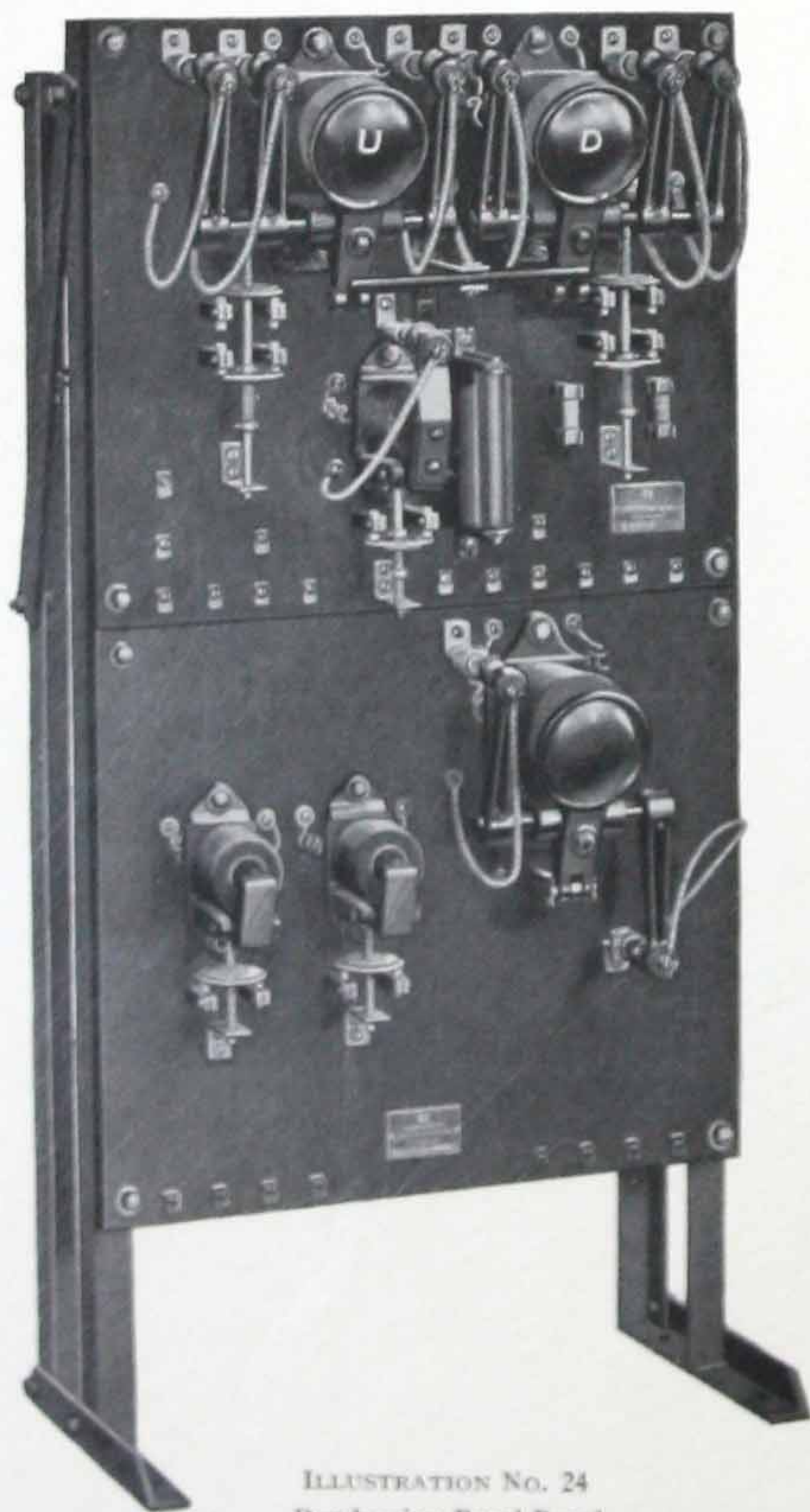


ILLUSTRATION No. 24
Dumbwaiter Panel Board

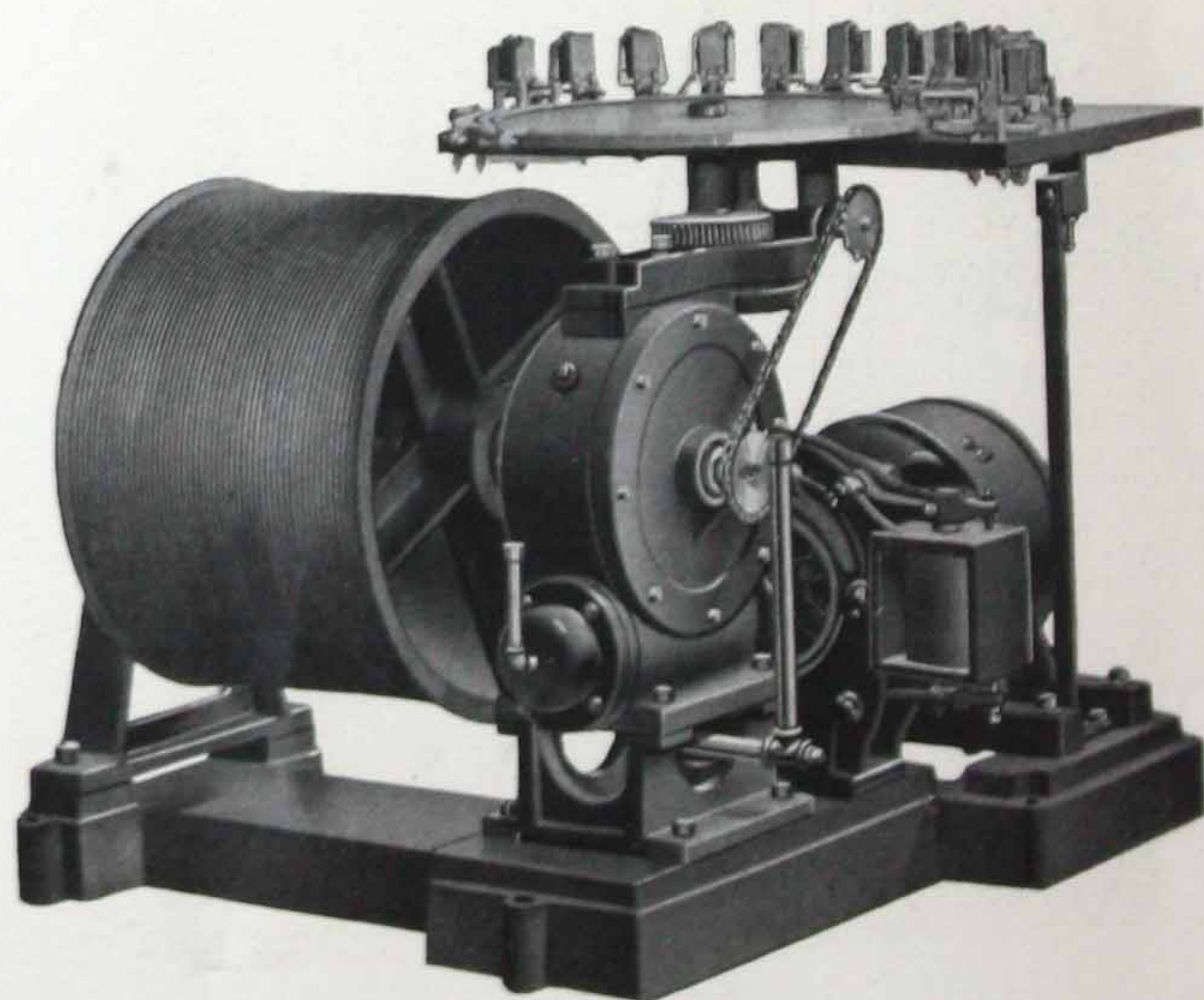


ILLUSTRATION No. 25
Dumbwaiter Hoisting Machine

the car was last sent. A signal lamp on the control board tells the operator whether or not the car is in motion and also if any door is open. This control is inoperative while the car is in motion or while any door is open. At each floor a push button is installed and connected to the Call Annunciator on the control board to indicate to the operator where the car is wanted, while in the car a set of buttons are installed and connected to the Send Annunciator. The pressure of one of these buttons notifies the operator which floor he desires the car sent. A bell is installed at each opening, which enables the operator to signal any floor notifying the approach of the car. This bell is also used to notify any floor delaying the car by lack of attention. The illustration at the bottom of this page shows the control panel as just described.

The illustration showing a typical dumbwaiter car shows: "A," the cold-rolled steel rail; "B," the car shoe; "C," the slack cable switch; "D" and "E," the conduit for the wiring to the slack cable switch and lamp "F" is the chain pull switch for the signal lamp.

As we are the oldest and largest manufacturers of electric dumbwaiters in the world, it stands to reason we are in an excellent position to make worth-while recommendations as to the type of machine and control best suited for your requirements.

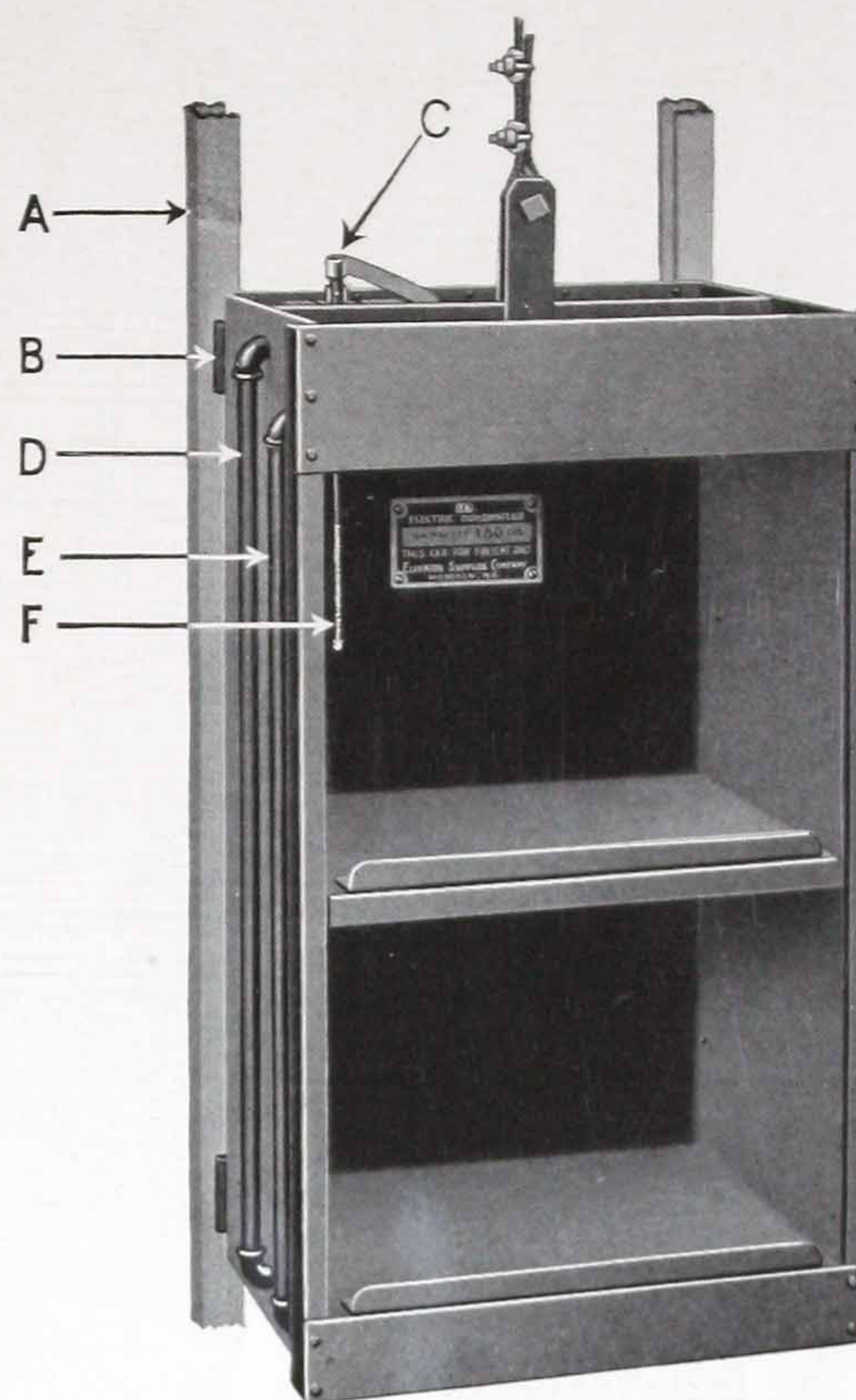


ILLUSTRATION No. 27
Dumbwaiter Car

Important to Architects and Engineers

IN planning your building, if you can arrange to build the dumbwaiter hatch to conform to the sizes given below, there will be a considerable saving in the cost of the dumbwaiter. Full details of our standard-built dumbwaiters will be furnished upon request.

STANDARD DUMBWAITERS TO SERVE TWO TO SIX FLOORS ONLY.

Type	Load Capacity	Speed Feet per Minute	Inside Hatch Dimensions (Must be guaranteed)	INSIDE CAR DIMENSIONS			Type of Car
				Width	Depth	Height	
F-100	100 Lbs.	100	30" x 30"	21"	22"	30"	Wood
G-200	200 Lbs.	100	34" x 34"	25"	26"	36"	Wood
CB-300	300 Lbs.	100	38" x 38"	31"	31"	42"	Steel
CB-500	500 Lbs.	100	43" x 43"	36"	36"	48"	Steel

Full Automatic Control furnished in each case.

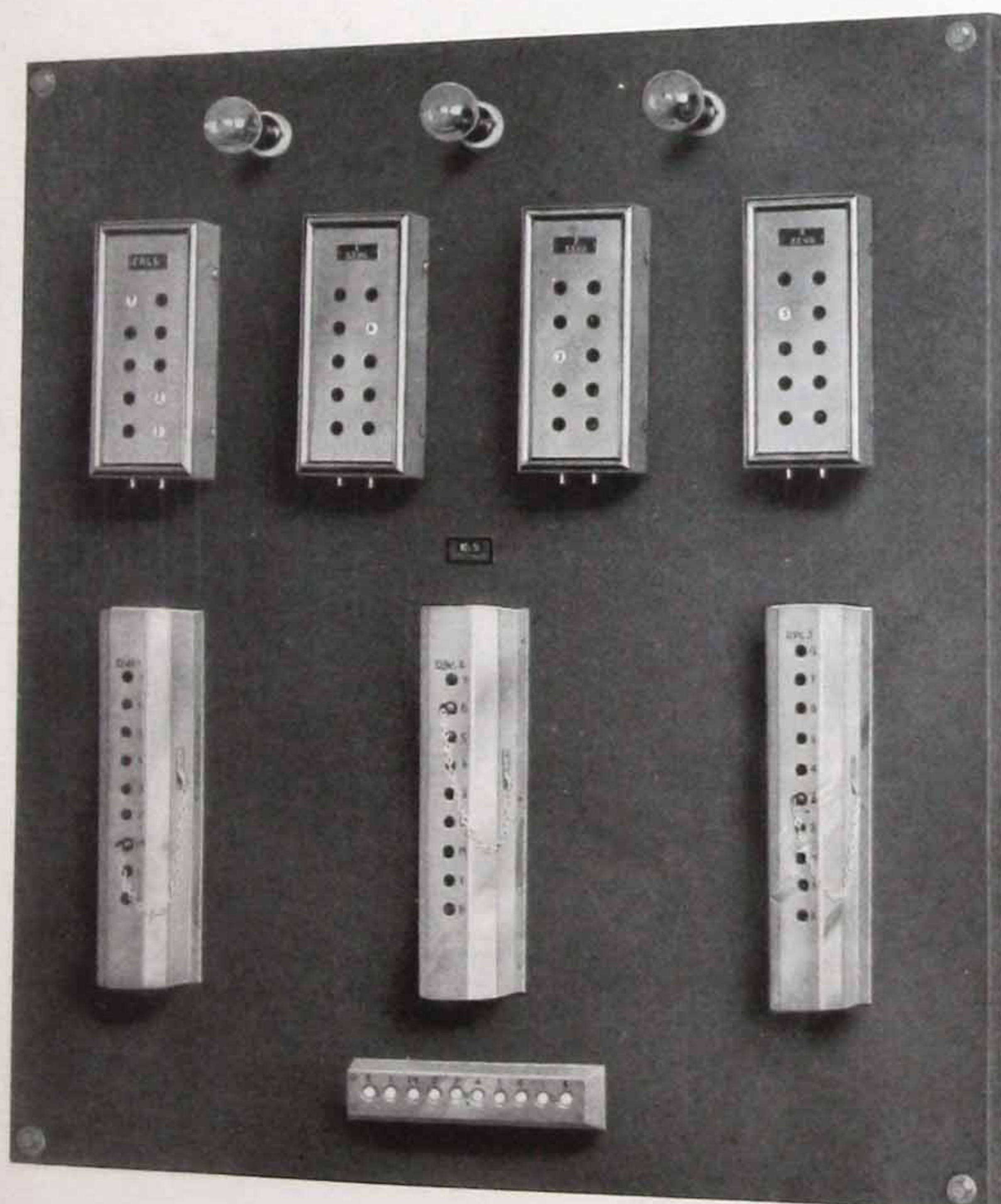


ILLUSTRATION No. 26
Dumbwaiter Central Control Station



The HOME OF **ES** PRODUCTS

Hoboken, N. J.